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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/756,084	01/13/2004	Ernst Neumeier	P03,0563	3106

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SCHIFF HARDIN LLP
Patent Department
6600 Sears Tower
233 South Wacker Drive
Chicago, IL 60606

EXAMINER	
KAO, CHIH CHENG G	
ART UNIT	**PAPER NUMBER**
2882	

DATE MAILED: 03/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/756,084	NEUMEIER ET AL.	
	Examiner	Art Unit	
	Chih-Cheng Glen Kao	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-16 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-16 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 13 January 2004 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 6/7/04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: (figs. 1 and 2, "ZS", which may be referring to "central ray Z" on page 5, line 16, in the description), (fig. 2, #28), and (figs. 3, 4, and 7, #32). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: (page 6, line 3, "volume 25") and (page 7, line 1, "electromagnet 33"). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing

on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 1, 7, 8, 14, and 16 are objected to because of the following informalities, which appear to be minor draft errors including grammatical and lack of antecedent basis problems.

In the following format (location of objection; suggestion for correction), the following corrections may obviate their respective objections: (claim 1, line 4, "said exterior of said corner"; inserting - -surface- - after "exterior"), (claim 7, line 2, "generally cylindrical and wherein said element"; replacing "and" with a comma), (claim 8, lines 11-12, "interacts with said electron beam"; replacing "X-ray" with - -electron- - in line 7 of claim 8), (claim 14, lines 2-3, "having V-shape at"; inserting - -a- - after "having"), and (claim 16, lines 3-4, "said U-shaped element"; changing the dependency of claim 16 from claim 12 to claim 13).

For purposes of examination, the claims have been treated as such. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Richardson (US patent 6529579).

Richardson discloses an arrangement and method comprising an element (fig. 3A, #500) adapted to fit over an exterior surface of a corner (figs. 3 and 3b, corner defined by #102 in the section between the cathode and anode), said element having an element surface (fig. 3b, surface of #500 between #110 and 102) facing said exterior surface of said corner, said element surface, in combination with said exterior surface of said corner, forming a channel (fig. 3B, #506) adapted to allow flow of a coolant therethrough (col. 7, lines 7-8).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 2, 3, 8, 13, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richardson as applied to claims 1 and 12 above, and further in view of Styrnol et al. (US patent 6252935).

6. Regarding claims 2, 3, and 8, Richardson discloses an arrangement as recited above. Richardson further discloses a projection generally cylindrical (fig. 3a, #102 between the cathode and anode sections), and wherein an electromagnet straddles said generally circular projection to interact with, and deflect, an electron beam during operation of the X-ray tube (col. 5, lines 37-43). Richardson further discloses an x-ray source comprising an x-ray tube (fig. 1) having an evacuated housing (fig. 2, #102, and col. 5, lines 23-24) containing an interior space (fig. 3, right side of #102) and having a housing projection forming a chamber (fig. 3, left side of #102) in communication with said interior space via a neck region of said housing, said neck region forming a corner at an exterior of said housing (fig. 3, middle section of #102), a cathode (fig. 3, #106) disposed in said chamber and an anode (fig. 3, #108) disposed in said interior space, said cathode emitting an electron beam (fig. 3, "e1") that proceeds through said neck region and strikes said anode at a focus to generate X-rays from said focus (col. 5, lines 38-41), and an electron beam deflector (fig. 3b, #110) disposed at an exterior of said neck region of said housing for generating a magnetic field that interacts with said electron beam to deflect said electron beam to adjust a position of said focus on said anode (col. 5, lines 38-41), said electron beam deflector straddling said neck region at said corner (fig. 3b, #110 and 104), having a surface (fig. 3b, #500 in between #110 and 102) facing said corner to form a channel adapted to allow a flow of coolant therethrough (fig. 3b, #506, and col. 7, lines 7-8).

However, Richardson does not specifically disclose a U-shaped electromagnetic yoke with two legs straddling.

Styrnol et al. teaches a U-shaped electromagnetic yoke with two legs straddling (fig. 4, #33).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the arrangement and source of Richardson with the yoke of Styrnol et al., since one would be motivated to make such a modification to generate changes in focal spot positions at higher speeds and frequency (col. 1, lines 43-46) as shown by Styrnol et al.

7. Regarding claims 13 and 16 and for purposes of being concise, Richardson as modified above suggests a method as recited above.

However, Richardson does not disclose two channels.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the method of Richardson as modified above with channels, since constructing a formerly integral structure in various elements involves only routine skill in the art. One would be motivated to have channels to reduce costs in repair and replacement compared to replacing the entire thing.

8. Claims 4, 5, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richardson and Styrnol as respectively applied to claims 1 and 8 above.

Richardson as modified above discloses or suggests an arrangement and source as recited above.

However, Richardson does not specifically disclose channels defining a generally triangular cross-section with a flat surface.

Richardson further discloses that the geometry may be varied (col. 7, lines 19-47).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the arrangement and source of Richardson with channels, since constructing a formerly integral structure in various elements involves only routine skill in the art. One would be motivated to have channels to reduce costs in repair and replacement compared to replacing the entire thing.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the arrangement and source of Richardson with a channel defining a generally triangular cross-section with a flat surface, since a change in shape is generally recognized as being within the level of ordinary skill in the art (col. 7, lines 19-47) as shown by Richardson. One would be motivated to make such modification to increase the flow rate to achieve a desired cooling effect (col. 7, lines 23-27) as implied from Richardson.

9. Claims 6 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richardson as applied to claims 1 and 12 above, and further in view of Price et al. (US patent 6249569).

Richardson discloses an arrangement and method as recited above. Richardson further discloses a channel opening adapted to direct a flow of coolant (fig. 2, #502).

However, Richardson does not specifically disclose a nozzle and nozzle opening disposed at a channel opening adapted to direct a flow of coolant through a channel opening and channel.

Price et al. teaches a nozzle (col. 8, lines 54-55), which would necessarily have a nozzle opening, disposed at a channel opening adapted to direct a flow of coolant (fig. 2, #32) through a channel opening and channel (fig. 2, #172).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the arrangement and method of Richardson with the nozzle of Price et al., since one would be motivated to make such modification to better fit components together (col. 8, lines 54-55) as implied from Price et al.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Richardson in view of Price et al. as applied to claim 6 above, and further in view of Styrnol et al.

Richardson as modified above suggests an arrangement as recited above. Richardson further discloses a projection generally cylindrical (fig. 3a, #102 between the cathode and anode sections), and wherein an electromagnet straddles said generally circular projection. Richardson also discloses channel openings, which can be located elsewhere on the element as necessary to achieve a desired type of fluid flow and heat transfer rate (col. 6, lines 13-23).

However, Richardson does not specifically disclose an element having a U-shape with two legs straddling the projection, two channels on opposite sides, and a nozzle having a V-shape.

Styrnol et al. teaches an element having a U-shape with two legs straddling the projection (fig. 4, #33).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the arrangement of Richardson with the element having a U-shape of Styrnol et al., since one would be motivated to make such a modification to generate changes in focal spot positions at higher speeds and frequency (col. 1, lines 43-46) as shown by Styrnol et al.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the arrangement of Richardson as modified above with the two channels and openings on opposite sides, since rearranging parts of an invention involves only routine skill in the art (col. 6, lines 13-23) as shown by Richardson. One would be motivated to make such modification to achieve a better heat transfer rate (col. 6, lines 13-23) as implied from Richardson.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the arrangement of Richardson as modified above with a nozzle having a V-shape, since a change in shape is generally recognized as being within the level of ordinary skill in the art. One would be motivated to make such modification to make the device more compact (fig. 2, #402a or 402b) as implied from Richardson.

11. Claims 9, 10, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richardson in view of Styrnol et al. as applied to claims 8 and 13 above, and further in view of Price et al.

12. Regarding claim 9, Richardson as modified above suggests a source as recited above. Richardson further discloses channel openings, which can be located elsewhere on the element as necessary to achieve a desired type of fluid flow and heat transfer rate (col. 6, lines 13-23).

However, Richardson does not specifically disclose channels, channel openings for each channel, and a nozzle having a nozzle opening disposed adjacent to a channel opening for directing a flow of coolant through a channel opening and channel.

Price et al. teaches a nozzle (col. 8, lines 54-55), which would necessarily have a nozzle opening, disposed at a channel opening adapted to direct a flow of coolant (fig. 2, #32) through a channel opening and channel (fig. 2, #172).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the source of Richardson as modified above with channels, since constructing a formerly integral structure in various elements involves only routine skill in the art. One would be motivated to have channels to reduce costs in repair and replacement compared to replacing the entire thing.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the source of Richardson as modified above with channel openings to each channel, since rearranging parts of an invention involves only routine skill in the art as shown by Richardson (col. 6, lines 13-23). One would be motivated to make such modification to achieve a better heat transfer rate (col. 6, lines 13-23) as implied from Richardson.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the source of Richardson as modified above with the nozzle

of Price et al., since one would be motivated to make such modification to better fit components together (col. 8, lines 54-55) as implied from Price et al.

13. Regarding claims 10 and 14 and for purposes of being concise, Richardson as modified above suggests a source and method as recited above.

However, Richardson does not disclose a nozzle having a V-shape.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the source and method of Richardson as modified above with a nozzle having a V-shape, since a change in shape is generally recognized as being within the level of ordinary skill in the art. One would be motivated to make such modification to make the device more compact (fig. 2, #402a or 402b) as implied from Richardson.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gk

EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER